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1914 DESCRIPTIVE CATALOGUE 1915

OF OUR *Products of Agriculture*

WANNAMAKER

Pedigree-Cleveland Big Boll & Toole Cotton Seed
Marlboro Two-Ear Seed Corn and Appler Oats

SEED - BREEDING OUR SPECIALTY



1913 Breeding Patch of our Pedigree-Cleveland and Originator on October 15th.
Three-fourths of cotton already picked, remaining one-fourth open.

MODEL SEED FARM

Saint Matthews, South Carolina

W. W. Wannamaker & Sons, *Proprietors*

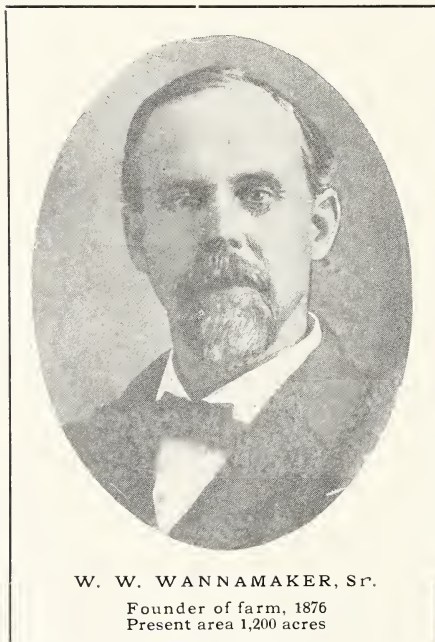
NOTICE: Reserve this Catalogue for 1915 as we may not publish new one another year.

Announcement

We beg to announce that the name of our seed Farm will be MODEL SEED FARM hereafter instead of Modern Seed Farm as before. We believe MODEL SEED FARM to be a more fitting name, as our method of plant breeding is MODEL, and therefore our plants MODELS of plant life; besides, some of our customers have already persisted in calling our seed farm MODEL SEED FARM.

Location of Farm

MODEL SEED FARM is located two and one-half miles East of St. Matthews, S. C., and on the highest elevation between Charleston and Columbia, S. C. The soil is a sandy loam, with a stiff red clay six inches to two feet below surface. It is the middle class of soils on which cotton, corn, and oats grow to perfection. The altitude adds to its other advantages in growing cotton seed for boll-weevil territory.



Personal Statement

Since childhood I have shown a fondness for the farm, and especially that part of the farm connected with Plant Life. This seems to have been born into me by the fact that all of my ancestors have been farmers. In 1904 I entered Clemson Agricultural College, and graduated in the Agricultural Course in 1907; and it was while there that I conceived the idea of establishing a seed farm. A thorough study was made of varieties of cotton, corn and oats, and parties growing them, in order to secure seed with which to begin breeding at the highest possible point; and upon graduating, I began the work at once—the breeding of the best strains from the best varieties. That I have accomplished something—although not near what I expect—in the six years that I have devoted the best of my time and energy to the practical part of this, my hobby, the foregoing pages will tell.—W. W. W., Jr., Plant Breeder.



A CAROLINA SPECIALTY THAT FAIR DIDN'T SHOW

Progressive Work of Messrs. Wannamaker at St. Matthews and Their Business Methods.

Special to The State.

St. Matthews, Nov. 9.—The State fair, which has grown to such proportions that it is literally a State institution in every sense of the word, had many interesting exhibits, many special occasions and attractions peculiar to its scope of meaning. At the first glance it may seem that it would be hard to add to this record, that it would be still more difficult to mention another exhibit that would have added to the general and specific interest of this splendid fair, but there is a South Carolina specialty that would have been unusually interesting and profitable had its purpose and its management been revealed practically and theoretically at the State fair. And this exhibit has its local habitation and its home very near the thriving town of St. Matthews, so it would not have been difficult to have shown the farmers and business men of the State what two very fine young farmers and business men are doing. The gospel according to St. Matthews proclaims much of thrift, well-directed energy and success. Some of the largest mercantile establishments of the State are here found. Some of the best financial institutions of South Carolina are located here, and this town and the adjacent locality have long been noted for strong, influential, progressive men. The new county of Calhoun is but another monument to the well-directed and ambitious efforts of some sterling workers, and it is more than hinted that future gubernatorial timber is seen daily walking the streets of this same St. Matthews.

To return specifically to the real purpose of this article, your correspondent wishes to call special attention to the progressive work of T. M. Wannamaker and W. W. Wannamaker, Jr., who live on their fine farm near St. Matthews. These scientific, educated young farmers made a practical success of farming as this occupation is generally known. W. W. Wannamaker, Jr., was educated at Clemson, the State Agricultural College, and it may be incidentally but very specifically remarked that when a college sends forth such an educated and trained specialist, then such an institution is certainly fulfilling its mission. After learning a great deal these young farmers organized the Modern Seed farm, where seed breeding, technically, and with practical attention given to the theory and the technicalities of the work were added to the other special features of this specialty. They managed affairs well from the very beginning, and today it is a treat to visit their beautiful farm and see some of the results of their skilled, trained work.

They breed selected cotton, corn and oats seed for distribution, and their watchword is "Honesty, method and care in selection is our policy," and the practical results bear out this statement. Another quotation from their record: "By applying the science of breeding methodically and with good judgment, we get the quickest and most effective results possible." Still another quotation from their business methods: "We guarantee the purity and productivity of our seed, and if there is any just cause for complaint all money will be refunded at once."

The firm is Wannamaker & Sons, the well-known and progressive farmer and citizen, W. W. Wannamaker, Sr., is at the head of the business. The farm contains 1,200 acres, is a fine body of land, beautifully located with all modern improvements. This article cannot deal with details, as this will be done later. Last year two bales of cotton were gathered to the acre from their fine seed, but this year, owing to the very dry season, "we will only get about six hundred pounds of lint cotton per acre," was what your correspondent was informed.

The experiments made by this firm are of great interest, and show some surprising results. A visit to their farm will repay any one interested in advanced, scientific agriculture. They have seed houses of the latest modern design, breed several varieties of cotton, and anyone who visits and sees for himself will know beyond any doubt that the utmost care is devoted to the absolute purity of the seed, and that scientific methods rule absolutely. These business men are doing a splendid piece of work, and later your correspondent hopes to give to the readers of The State a detailed account of what is here being so well done.—J. E. Norment.

Recommendation

SOUTH CAROLINA EXPERIMENT STATION,
CLEMSON COLLEGE, S. C., September 18, 1911.

To Whom It May Concern:

It gives me pleasure to recommend Mr. W. W. Wannamaker, Jr., to the public as a careful, painstaking plant breeder. Mr. Wannamaker graduated at Clemson College in the Agricultural course, and while here he was a splendid student and took special interest in plant breeding. His variety of cotton, known as Wannamaker's Cleveland Big Boll, has given splendid results at our Experiment Station.

Very truly yours,

J. N. HARPER,
Director South Carolina Experiment Station.

Messrs. W. W. Wannamaker & Sons,
Saint Matthews, S. C.

Gentlemen: In regard to your Pedigree-selection of Cleveland Big Boll cotton the results are conclusive evidence that you have exercised great care and good judgment in your selection. The single-stalk-selection is the only sure way of improving cotton and corn. The possibilities of the cotton plant are yet unknown, but by close, systematic, and persistent single-stalk-selection greater and greater yields can be reached. You are on the right track and if you will stick to it you will get something that will make you feel good and at the same time you will be a benefactor to the farmers of our dear old Southland.

JAMES M. KIMBROUGH,
Agriculturist and Assistant Director Georgia Experiment Station,
Experiment, Georgia, 1911.

Messrs. W. W. Wannamaker & Sons,
Saint Matthews, S. C.

Gentlemen: I congratulate you on your seed catalogue, and I feel that every man interested in Southern agriculture will join me in applauding you in selling your seed under the name of the standard variety rather than bestowing new and misleading names.

J. F. DUGGAR,
Director Alabama Experiment
Station, Auburn, Alabama, 1911.

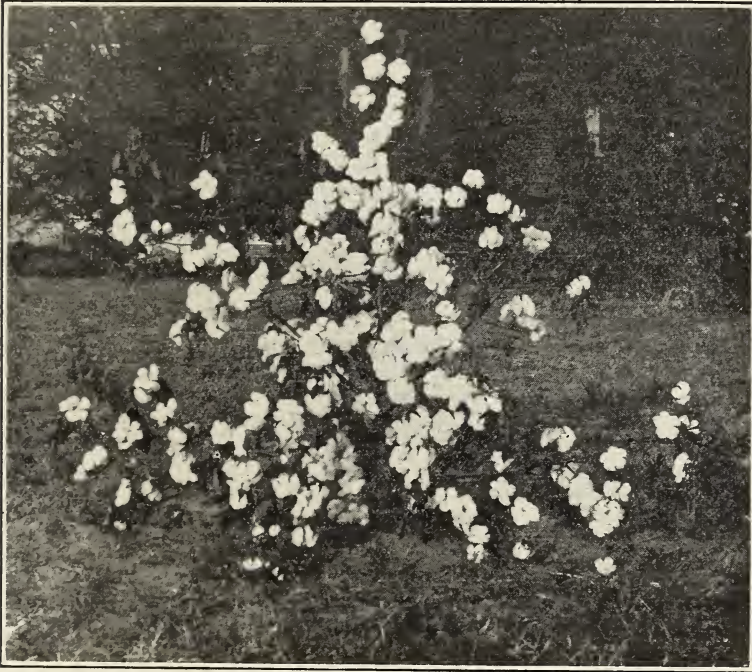
Messrs. W. W. Wannamaker & Sons,
Saint Matthews, S. C.

Gentlemen: Your esteemed favor of recent date asking for the standing of your Wannamaker Pedigree-Cleveland Big Boll cotton received, and I beg to say that it stands at the head of the list.

JAMES M. KIMBROUGH,
Georgia Experiment Station, Dec. 22, 1913.

Wannamaker's Pedigree - Cleveland Big Boll Cotton Seed

Multiplied from a Single-Stalk-Selection After Six Years of Scientific Plant-to-row Breeding. The Best "All-Round" Cotton in the South Today, Boll Weevil or no Boll-Weevil.



Plant taken from Breeding Patch of 1913. Note broad open growth of plant, uniform distribution of bolls, and the perfect opening of bolls over the entire plant.

General Description of Plants

Each Pedigree, and true to type throughout; weed-growth-unlike other strains-medium to small, strong, erect, and as broad as high; three to four primary limbs from low down; fruit spurs numerous, long, and closely jointed; bolls equi-distant and evenly distributed over the entire plant, as thickly set as bolls of small-bolled cotton, large, sixty average size to pound, open perfectly, five-locked, easy to pick, with storm-resistance, free from boll-rot; lint of fine quality and one inch in length; seed of medium size, grey, fuzzy; foliage medium to light, dark green; very early and sets fruit

closely and rapidly from bottom to top-crop, which is never caught by frost, and can be picked early in boll-weevil territory in order to destroy stalks early.

Before we began our breeding work on Cleveland Big Boll Cotton in 1908 it had been a leader for several years at the Experiment Stations of the South. At the Georgia Experiment Station, since 1906, when it was first tested, Cleveland has averaged first in close competitive tests with the cream of twenty to thirty-four other prominent varieties. At the Mississippi Experiment Station it averaged first with the same competition during the years 1906, 1907 and 1908. Besides taking the highest rank of the first importance, namely, productivity, it also had the advantage of being early; of large bolls, making it easy to pick; and of quality and length of staple, etc. Col. R. J. Redding, former director of the Georgia Station, after seventeen years' experience in testing varieties of cotton, pronounced Cleveland "The best 'all-round' variety I have ever tested."

In accordance with the above, we secured our first bushel of Cleveland cotton seed from J. R. Cleveland, the originator, in 1908, planted one acre of cotton from these seed and used the rest in a most carefully conducted and accurate variety test with several other very prominent varieties at that time, namely, Layton's Improved, Moss' Improved, Broadwell's Double-Jointed (selection from King Cotton) and Peterkin. Everything was weighed, not guessed at, which resulted in Cleveland Big Boll excelling the next highest, Layton's Improved, by \$10.15, and the lowest, Peterkin, by \$18.38, in money value per acre—quite a difference, but not at all unusual. Again, in 1909, a test with the next highest, Layton's, proved a still greater difference in favor of Cleveland, therefore, its adoption.

Ⓐ Brief History of Our Pedigree-Cleveland

As far as the yield was concerned, we were highly pleased with our first year's experience with Cleveland Big Boll Cotton, but noticed that there was a great lack of uniformity in the individual plants. Some were wide-spreading, some more or less tall and steeple-shaped; on some plants the fruit was uniformly distributed, on others it was borne in semi-clusters and clusters; the size and shape of bolls also varied considerably; and an examination of the thickness of the lint around the seed of different individuals showed a great difference in the percentage of lint. We accordingly set out to correct this lack of uniformity by adopting the Plant-To-Row method of breeding cotton, the most approved method of today. Now, we all know (although it has not been long recognized or practiced) that there is a great individuality—and sex—in plants as well as animals. Some cows, with the same food and attention, produce more butter than others, and hogs and hens and horses more meat and eggs and work. In all nature—especially plants—we find this same variance, and it is the duty and privilege of man to take advantage of it, separate the good from the bad, multiply their kind, and disseminate the seed among mankind. My ideal type of plant of the Cleveland was one with four primary limbs coming from low down, a stalk that grew almost as wide as high when given room,

with fruit evenly distributed, not clustered, short joints, and a high percentage of lint. This would also give a stalk of great prolificness, and a tendency not to grow too much weed. I did not want to go to extremes in any one point, such as size or bolls, but to get "all-round" good plants—extremes are always failures. Therefore, in the fall of 1908 I very painstakingly—considering every point—selected twenty-five of the very best plants from the acre we had planted in the seed received direct from the originator. The best bolls from each of the twenty-five individuals were put in separate paper sacks and the characteristics of each marked on its sack for future reference. The following spring the seed from each sack were planted on separate rows—25 in all—two acres long, and plants four feet apart in drill. You should have seen the difference in the manner of growth of these rows that fall—each being a distinct variety from the original variety, Cleveland; but you could not tell for the life of you which row would yield the most "Seed Cotton" without weighing. In taking notes, however, I noticed that one particular row, though not growing very tall, was well shaped, broad and quite uniform and well fruited throughout; and by examining the lint around the seed it appeared to be more woolly and thicker, indicating high per cent. of lint. This row, before weighing, I picked out as the best, but I was not sure of my good judgment. After marking with strings the best dozen plants on each row, this weighing I did carefully after each picking—the cotton also from each row being put in separate sacks until final results were determined by the last picking. I was surprised to learn that the yield of seed cotton of the twenty-five selections from this one variety varied so much—the highest yielding producing 2,700 pounds and the lowest only 1,806 pounds per acre. The per cent. of lint, which was determined by a small 10-saw gin (used in our breeding work in increasing the per cent. of lint), run by gasoline engine varied from 30 per cent. to 39 per cent.—quite surprising to you, I guess, and to me I confess. Now, if I had mixed all the seed of these twenty-five apparently fine stalks together and planted them I would have gotten—striking an average—2,253 pounds of seed cotton per acre and 34.5 per cent. of lint. See? In 1910 the best half dozen stalks from the best half dozen "all-round" rows of the twenty-five tested in 1909 were tested on one acre of land again, and per cent. of lint of each determined. Thus, by two years' test—without doubt and guess work—I found the two best "all-round" producing "individuals" (that would transmit their qualities to their offspring) out of the original twenty-five. In our former Catalogue we called these two selections selection "A" and selection "B," selection "A" being considered the best. We would have planted our entire crop of 1911 in "A" if we had had enough seed of these, but we did not have enough, so planted the rest separately in the seed multiplied from "B," the next best selection. This year our entire crop was planted in seed reselected—by Stalk-to-Row Plat and Breeding Patches—from selection "A" since 1908. These are the high linting seed that we have had tested at the Experiment Stations for the past three years—1910, 1911 and 1912. Therefore, those that have bought other seed than "A" from us had better secure our much superior selection "A" this year, which is better now than

ever before. It must be remembered that I have an acre and a half plot devoted every year to testing our select individuals from the original individual "A" selected in 1908. Each year the yield, per cent. of lint, etc., of each row is personally determined and only the best plants from the best rows are allowed to go into the next year's Stalk-to-Row plat. The general best seed of this best row are used to plant from four to six acres, and the seed on the rest of the plat are used to plant from thirty to fifty acres, according to yield. The rest of our crop is planted from the four to six-acre Breeding plot of the year previous. We sell no seed from either the Stalk-to-Row plat or the Breeding plat (except, perhaps, when we have more than we need—not very often) as we need all for stock seed. Any seed quickly deteriorate without reselection. Our system is not only thorough but systematic, and insures that our Pedigree-Cleveland is not only kept up to its present standard, but is improved and better and better from year to year. Therefore, if farmers wish the best, they should get fresh seed from us each year.

Why Our Pedigree-Cleveland is Better than Other Strains of the Cleveland

(1) Because it is PEDIGREED. Every plant that is grown this year, or years to come, can be traced back through record yielding plants to the single superior plant selected in 1908. There is no other Pedigree strain of Cleveland being sold in the South today.

(2) On account of our seed being bred (by means of Stalk-to-Row Plat and Breeding Plots) from a Single-Stalk-Selection, our seed give much more uniform results than other strains—(see Experiment Station records). Every stalk grows, fruits, and lints alike; the field is uniform in growth and height, something beautiful to behold and to be proud of. Most plant breeders only go into the field and select a heterogeneous (mixed) lot of plants, which, in their judgment—often vary erroneous—approach each other in merit and likeness. This, and failure to reselect from year to year, account for the great lack of uniformity in the varieties of today.

(3) Our breeding methods are thorough and systematic. They insure that our PEDIGREE-CLEVELAND is not only kept up to its present standard of productivity, but is improved and better and better from year to year. It is only by persistent and skillful selection and cultivation that a variety is kept up and improved. There is a constant tendency to revert, or go back, to a former or less excellent type.

(4) Our PEDIGREE-CLEVELAND is a new variety and entirely different and superior to the original Cleveland or other strains of the Cleveland. The plant, unlike other strains, does not grow too tall and weedy on rich lands, but, when given distance, grows as wide as tall, and fruits much closer. In fact, it has large bolls, with equal prolificness as our small-bolled cottons. In other words, it is more productive than other strains.

(5) The per cent. of lint, its crowning point, is from three to six per cent. higher than other strains of the same cotton. This not only makes it more productive, but reduces the cost of picking and impoverishes the soil less.

(6) It is earlier than other strains, with greater productivity, and, therefore, better than any other cotton, either for boll weevil or no boll weevil.

(7) It is free from disease, because we select for immunity. No plants are saved that are diseased, but discarded.

We wish to prove the above by the records of the Georgia Experiment Station, Experiment, Georgia (write for bulletins of variety tests), where we have sent our PEDIGREE-CLEVELAND for the past four years to be tested with other strains of the Cleveland as well as other varieties. We refer to the Georgia Station because this station has made a specialty of testing varieties of cotton for a number of years, and their tests are thorough and accurate. Figures recently secured from the Bureau of Statistics, U. S. Dept. of Agriculture, give the average price paid farmers per pound for lint cotton and per ton for cotton seed as follows: 1910, lint 14.1c. per pound, seed \$27.40 per ton; 1911, lint 12.7c. per pound, seed \$18.30 per ton; 1912, lint 10.6c. per pound, seed \$18.44 per ton. Calculating from these figures, which are indisputable, the money value per acre (the only real value of cotton) of the two highest ranking varieties for each of the years 1910, 1911, and 1912, you will find our PEDIGREE-CLEVELAND to average for the three years \$3.28 MORE IN MONEY VALUE PER ACRE. Therefore, you could afford to pay us \$3.28 more per bushel of our seed, but we do not ask this much. It must be remembered that one year's test of a variety of cotton counts nothing. It may be at the top of the list one year and the next year at the bottom. Our PEDIGREE-CLEVELAND has been tested three consecutive years and has excelled, on an average, thirty-three varieties tested in 1910, twenty-eight in 1911, and twenty-five in 1912. In 1910 the per cent. of lint was 38.6%, being excelled by only one variety of the thirty-three tested, Covington-Toole, which linted 39.3%. In 1911 the per cent. of lint was 39.4%, being excelled by only one variety of the twenty-eight tested this year, Summeror's High Linter, which only made 980 pounds seed cotton per acre on account of boll rot against 1,716 pounds per acre made by our PEDIGREE-CLEVELAND. In 1912 the per cent. of lint was 39.3%, higher by .6% (six-tenths) than any of the twenty-five varieties tested. Thus it is seen that our PEDIGREE-CLEVELAND Big Boll has not only excelled all other strains of the Cleveland by three to six per cent. in lint turned out, but has equaled and excelled even the small-bolled cottons in percentage of lint. An examination of the table for the three years will also show that it ranks among the first in earliness, which is very desirable for boll weevil sections.

We have also sent our PEDIGREE-CLEVELAND Cotton Seed to the Mississippi Experiment Station for the past two years for testing. In 1911 it was only placed in the preliminary test of thirty-eight varieties and excelled all in seed cotton per acre, and equaled the highest in percentage of lint. We have just received a report of the main Variety Test of 1912 from the director. Our PEDIGREE-CLEVELAND excels all the twenty-eight varieties in money value per acre, seed cotton per acre, and was only excelled by two in percentage of lint. The seed cotton per acre of our Cleveland was 1,774 pounds. Cleveland's Cleveland 1,791 pounds, and Station Cleveland 1,719 pounds. Our Cleveland made 656 pounds lint per acre,

Cleveland's Cleveland 609 pounds, and Station Cleveland 601 pounds. A report received from W. R. Perkins, formerly of the Mississippi Experiment Station and also formerly chief of the Agricultural Department at Clemson College, reads as follows:

Wannamaker & Sons,

St. Matthews, S. C.

Gentlemen:

Your letter of the seventh inst. received. Wannamaker's Cleveland Big Boll made the best yield of all the varieties in our test, 1,412 pounds seed cotton per acre and 480 pounds of lint. The next best yield was 377 pounds lint.

You have a splendid cotton. One of our plantations was planted in it this year and made almost a bale of cotton to the acre.

The size of plats in our test was approximately .8 of an acre.

W. R. PERKINS,

Supt. Delta Farms Co.

Deeson, Boliver Co., Miss., Jan. 14, 1913.

Will also state that our PEDIGREE-CLEVELAND stood first at the McNeil Branch Experiment Station, Miss., with 2,391 pounds seed cotton per acre. The next highest yield was only 1,896 pounds seed cotton per acre. It also stood among the first at the Holly Springs and Delta Branch Experiment Stations, both as to yield and earliness. Our Cleveland stood second at the Alabama Station in 1912, with freedom from boll rot.

1913 RECORD.

We have not been able to receive full reports at this time for 1913, but have been favored with the following:

Georgia Experiment Station,

Dec. 22, 1913.

Messrs. Wannamaker & Sons,

St. Matthews, S. C.

Gentlemen: Your esteemed favor of recent date asking for the standing of your cotton received. I am doing my best to get the results in shape for the printer. Your PEDIGREE-CLEVELAND BIG BOLL Cotton stands at the head of the list.

Yours truly,

J. M. KIMBROUGH,

Asst. Director and Agriculturist.

Deeson, Miss., Dec. 10, 1913.

Messrs. Wannamaker & Sons,

St. Matthews, S. C.

Gentlemen: Your cotton is showing up well at the Delta Experiment Station this year both as to yield and earliness.

Very truly yours,

W. R. PERKINS, Supt. Delta Farms Co.

Variety Test of Cotton, 1913, Georgia Experiment Station

By R. J. H. DeLoach, Director.

Preliminary Report from Circular No. 70, January, 1914.

	Seed Cotton Per Acre	Per cent. of Lint	Lbs. of Lint Per Acre	No. of Bolls per lb. Seed Cotton
Wannamaker's Cleveland	2852	37	1055	76
Easy Money	2642	38	1003	64
Half and Half	2616	37	967	68
Steinheimer's Cleveland	2495	35	876	61
Vallenwelder's Cleveland	2462	35	861	61
Columbia	2431	31	753	59
Adcock's Special	2325	36	837	59
Barber & Bro.	2310	35	808	69
Extra Early Selection.....	2289	35	801	78
Stone's Improved	2257	37	835	64
Adcock's Cleveland	2155	35	754	68
Schley	2149	33	709	63
Haaga's Foster	2115	30	634	80
Simpkin's Ideal	2096	35	733	83
Petway's Improved	2064	33	681	83
Franklin's Improved	1981	38	752	80
Upland Long Staple.....	1817	28	508	78
Weekley's Long Staple.....	1643	27	433	83
Broomis' Spring Grove.....	1514	31	469	86
Hite's Early Prolific.....	1498	37	554	67

In above table note that this is the first year that Easy Money, probably a new name for some old variety, has been tested and it may stand at the bottom another year. Our Pedigree-Cleveland has been tested each of past four years, and it is not fair to compare other varieties or strains with it unless they, too, have been tested for the same length of time—we are not afraid to send ours every year. Let others do the same, and prove their claims! You will note the standing of Half and Half or Summeror's High Linter, a strain of Cook's Improved, in 1911—only 442 pounds lint against 676 of our Pedigree-Cleveland, on account of boll-rot. Our Pedigree-Cleveland stood at the top this year; it stood at the bottom. While the table shows that our Pedigree-Cleveland stood about as high as any in percentage of lint in 1913, it stood higher other years, 38.6% in 1910, 39.4% in 1911, and 39.3% in 1912—note this uniformity of lint turn-out. Others claim a higher percentage of lint, but see if they do not fall far below their claims on an average at the Experiment Stations; and do not be so quick to believe their claims unless they prove them to be true by having their cottons fairly tested. This table does not give earliness of varieties, which will be given in a report later, but for Earliness our Pedigree-Cleveland has stood as high and higher than any of the other well-known early varieties, with the advantage of much greater productivity, higher percentage of lint, large bolls, etc.

See Testimonials in back of Catalogue.

As to productivity, earliness, etc., of our PEDIGREE-CLEVELAND, do you want any better evidence than the above? We have sold already this fall over 600 bushels of our PEDIGREE-CLEVELAND to farmers around the Georgia Experiment Station, who were so well pleased with seed last year. Also 350 bushels to W. R. Perkins, Supt. Delta Farms Co., which shows what he thinks of our PEDIGREE-CLEVELAND for boll-weevil conditions. These parties are in a position to know the facts, as they live near the Experiment Stations where they can see and compare the different varieties tested.

Special Advantages for Boll-Weevil Territory

Besides the advantages of the greatest productivity, highest percentage of lint, large bolls, etc., of our PEDIGREE-CLEVELAND, it has special advantages over other strains for boll-weevil territory. Its advantage as to earliness is equal to that of King, Simpkins, and other similar varieties, with much greater productivity, and ease of picking on account of large bolls. The great susceptibility of Cook's Improved, and its other synonyms, Brown No. 1 and Summerous Half and Half, to boll-rot or anthracnose make it much more desirable to these. Its special advantages over other strains of Cleveland for boll-weevil conditions are as follows: It is not only much earlier, but on account of being PEDIGREE-Cotton, each plant matures early and opens over the entire plant at the same time. In other strains some plants mature early and some late, and the cotton from the late maturing ones is lost. This uniformity of maturity is of undoubted advantage in gathering up all the cotton early and plowing under the stalks.

Another special advantage of our Big Boll Cotton over the small-bolled cotton (which we have not stated) is not only its much greater ease of gathering on account of size of boll, but its more perfect gathering, on account of more perfect opening of bolls and lack of nappiness. Much cotton is left in fields by laborers when there is imperfect opening of bolls, small bolls, and nappiness.

Price of Seed

The first seed that we were able to sell of our PEDIGREE-CLEVELAND was in 1911, when we had a few acres planted. In 1912 our entire acreage of this cotton was planted in the PEDIGREE-Strain, but the number of bushels sold was only about 800 on account of bad seasons for saving planting seed. This will give you some idea of the scarcity of the genuine WANNAMAKER PEDIGREE-Cleveland Big Boll cotton seed as yet. This year—1913—we saved about 3,000 bushels. They are our Latest Improved and of the best quality we have ever grown. At this writing, Dec. 31, 1913, we have already sold 1,200 bushels of the 3,000 and have done scarcely no advertising, so it will be wise for all to order early to get any of the remaining, as we sell no seed except our latest improved, grown on our own farm.

PRICES of Latest Improved Seed : \$2.00 per bushel ; 10 bushel lots, \$1.75 ; 50 bushel lots, \$1.65 ; 100 bushel lots and above, \$1.50 per bushel f. o. b. All seed of best quality and put up in our new white branded cotton sacks. Your orders will receive our best attention.

We think the above prices very cheap considering the work we have done and are doing in breeding our PEDIGREE-CLEVELAND to the highest standard of excellence, and its remarkable standing at the Experiment Stations. We have known many whose seed stood first only one year to sell as high as \$4.00 and \$5.00, and seed not near so good otherwise. One customer writes : "I would consider them cheap at \$5.00 per bushel and would gladly give it if they could not be had cheaper."

1913 Breeding Work of Our Pedigree-Cleveland



1913 Breeding Patch of our Pedigree-Cleveland and Originator on October 15th.
Three-fourths of cotton already picked, remaining one-fourth open.

"The secret of selection is not in crossing different strains of plants or merely separating some one strain and breeding from it—this is easy. Its importance consists in the great effect produced by the accumulation in one direction or several directions, during successive generations, of differences absolutely inappreciable by an uneducated eye. Not one man in a thousand has accuracy of eye or judgment sufficient to become an eminent breeder (this is why there are so few doing this work). If gifted with these qualities, and he studies his subject for years, and devotes his lifetime to it with indomitable perseverance, he will succeed, and may make great improvements; if he wants any of these qualities, he will assuredly fail."—Darwin.

The system and thoroughness of our selection, coupled with good judgment, and experience and study for past ten years give you the advantage of the best seed right up to date. Seed without re-selection and proper selection quickly deteriorate or run out. To improve requires talent, study, experience, and system. All variations and plants in my Breeding Patch that do not come up to my ideal are weeded out early in the season. This year I made, after a very careful study of every point, 1,000 individual selections from my breeding patch. About 15 of the choicest bolls were picked from each plant selected, making about $5\frac{1}{2}$ bushels of seed in all. The points stressed were productiveness, earliness, high per cent. of lint, freedom from disease, standard size of boll and length of staple, trueness to type, and every other point that goes to make the ideal "all-round" cotton plant of today. These seed are for our breeding patches of 1914. One hundred of the very best stalks of the 1,000 will be used for a special breeding patch, and a few special variations for plant-to-row test. The soil of our breeding patches is of uniform fertility, the plants checked 4 by 3 feet and only the healthiest plant left in each check, and every plant fertilized alike. This helps in making choice of plants naturally superior, not superior on account of extra distance or extra food. The breeding patches of our PEDIGREE-Cleveland will cover ten acres the coming year. Our general crop will be planted from seed selected and multiplied from a single-stalk-selection selected in the fall of 1911. This selection is superior in every point to anything that we have yet offered, and the seed will be for sale another year. Seed for sale this year are our latest improvement, grown from best seed of our breeding patch of a year ago—1912. The above will give some idea of the importance of securing some of our latest improved seed every year in order to get the advantage of our past experience and recent breeding.

Planting and Cultivation

A few words of caution: Big Boll seed are fuzzy and have a thicker hull than most other cotton seed. For this reason it takes the soil moisture longer to soak into them and cause them to germinate and come up; therefore they should be planted slightly deeper than other small bare seed, lest the soil dry out before they do absorb enough moisture, and, preferably, on solid beds thrown up previous to a rain. All practical farmers have found

that it does not pay to spare seed if you want to get a good stand (very important) of cotton year in and year out. You cannot with safety afford to plant with a planter less than one bushel of the large seed of Big Boll cotton. Being large fuzzy seed, the planters also need to be opened wider for them to come out freely; and the teeth of the Cox Planter should be raised in order to draw them through the opening better. Observe these cautions, for it is losing money and very unsatisfactory not to get a good stand of cotton. Furthermore, we, ourselves, will most probably be blamed for selling damaged seed—a very unbusinesslike policy. As to distance of planting, our strain of Cleveland not having a tendency to grow too weedy, requires no more distance on rich lands than the small-bolled cottons. We recommend the following distances for land of average fertility: For $\frac{3}{4}$ bale per acre plant in about $3\frac{1}{2}$ foot rows and hoe out about 10 to 12 inches in drill; for 1 to $1\frac{1}{2}$ bales, 4 foot rows, 12 to 18 inches in drill; for 2 bales, 4 to 5 foot rows, 24 inches in drill; for 3 bales, 5 foot rows, 36 inches in drill. Work and fertilize as you would other cotton.

See Testimonials in back of Catalogue.



COTTON BREEDING AND VARIETIES OF COTTON



By J. F. DUGGAR, Director Alabama Experiment Station

BREEDING.

Mass selection, that is, the harvesting together for seed purposes of a number of productive cotton plants, may serve to preserve whatever excellence the original variety possesses, but it does not rapidly improve the variety and ordinarily it does not improve it at all. For rapid improvement there are required more elaborate methods and especially the practice of what has come to be known as the plant-to-row method.

In every department of life there are individuals standing far above most others in some one or more qualities, but if we take several hundred or thousand individuals and strike an average, the result is not very widely different from the average of the race. Now mass selection makes use of averages and hence improvement by this method cannot be very rapid, because the offspring of exceptionally good individuals is inseparably mixed with the offspring of the poorer class.

On the other hand, if the seed from each fine individual cotton plant be planted on a separate row, we may expect that the plants on this row will for the most part partake of the excellent qualities of the parent plant without being lowered by the average of the variety. However, this is not the only advantage of the separate planting of the seed from each plant. An even greater advantage consists in the fact that not every good plant is prepotent, that is, has the power of reproducing its own excellent kind. Instead we sometimes find a row of plants to be quite inferior in spite of the fact that every one of them was grown from seed produced by the same mother plant. Such a result indicates something about the mother plant that could not be told by mere inspection, and that is the want of prepotency in that parent. In most cases where the excellence of the parent plant is due to some special advantage of fertilizer, distance, etc., the excellence is not hereditary.

THE WORK CANNOT BE DONE IN ONE YEAR.

A point that must be stressed in plant-to-row breeding as well as in mass selection is that selection must be made consistently each year. That is, if the special point in the first selection is earliness, the plants of the second generation must also be selected for earliness. Likewise if a large size of bolls is the deciding factor in the first selection, large bolls must again be selected in the second and third and succeeding generations. There must be constancy of aim. Fickleness in plant breeding is unpardonable, because decided change in aim from year to year undoes improvement already made.

In case it is not practicable to gin separately the seed cotton from single plants, the same end can be attained by hand-picking the lint from 5-boll samples from each of the plants producing the greatest amount of seed cotton. From the percentage of lint thus determined the total yield of lint of each plant can be calculated. There still remains the necessity of planting the seed from the selected individual plants with the lint still adhering. In this case about half a lock is planted in each hill and trodden on so as to make sure that the seed come in contact with the moist soil. The stand is apt to be poor.

As stated in the beginning, plant-to-row breeding of cotton is scarcely practicable except for those willing to devote much time to it. It is more difficult than plant-to-row breeding of corn.

VARIETIES.

The cotton plant is very unstable, changing readily its form of growth, its length of staple, and other qualities according to the soil or climate in which it is cultivated. This is one of the many reasons why the number of varieties is so large, reaching, I estimate, more than 400 names. While large numbers of these names have been found in the tests of several hundred varieties at Auburn to be merely synonyms, yet there is undoubtedly a large number of distinctive varieties entitled to separate names.

It is unfortunate for those who wish to grow improved varieties of cotton that they are liable in buying seed under the newest names to find that they have only obtained seed of a standard variety which is already grown in their neighborhood. Farmers may here well take the advice that Pope gave relative to the use of words:

"Be not the first by whom the new is tried,
Nor yet the last to lay the old aside."

As a rule, every farmer can find among the well-known varieties one that comes as near his ideal as do any of those advertised under new names and with extravagant claims. Indeed, the more extreme the claim, the greater the distrust with which it should generally be regarded. This is not said in any desire to confine any one's selection to varieties already well-known. On the other hand, I would recommend that before discarding any well-known variety, one or two new ones which the farmer has reason to believe are suitable to his conditions be tried, but at first only on a small scale. No farmer should change his variety simply to get the one that yielded highest at one experiment station for a single year. A single test is worth very little. But consider well any variety that stands high for three successive years.

DESIRABLE QUALITIES IN A VARIETY.

Among the qualities that are universally desired in a variety of cotton are the following:

Productiveness, as shown by the large yield of lint per acre.

Staple not noticeably below the average in length.

Large size of boll, unless this be sacrificed for some conflicting qualities.

At least medium storm resistance.

Freedom from any special difficulty in picking.

Freedom from especial liability to disease.

In conclusion, we should not forget that there is no one variety best for all conditions of soil and climate; that it is not always possible to predict in advance which will prove the most productive variety even for a given soil; that the purity and degree of selection practiced in recent generations by the grower of the seed is often more important than the particular name of the variety; and that no cotton 'can be expected to be uniform in its valuable qualities until it has been selected for a number of generations with the same quality or qualities in view. For the latter reason it would be well for buyers of cotton seed either to buy established varieties under their true and usual names, or else, before buying any new name, to insist upon knowing from what variety it is descended and whether the seller is willing to guarantee that the new name stands for certain definite improvements over the parent variety.



INTERESTING AND SOUND ADVICE FROM BULLETINS OF THE GEORGIA EXPERIMENT STATION.



By J. M. KIMBROUGH, Agriculturist and Assistant Director

"Cotton is dominant. It is here to stay. We may talk about crop diversification and we may, as in duty bound we should, practice diversification of crops, but the fact remains that Cotton is King. It is first in thought and first in work. Why? Because it is the only product of the South that is clothed with the dignity of collateral."

"The one object, upon which cotton growers' thoughts and energy should center, is a system that will give a larger yield per acre at smaller cost of production. That object was had in view when the experiments herein described were planned. The intensive system is the demand of the hour. This is summed up in a general requirement—a smaller comparative acreage, a thorough preparation of the soil, the best seed, higher fertilization, labor-saving farm implements and the most approved cultural methods."

It has been the custom of this station from its earliest history to test the most extensively advertised varieties of corn and cotton. We carried on a test of twenty-six so-called varieties of cotton this year. Some may say "why does the station continue this line of work?" Because it has been the means of exposing fraud and saving large amounts of hard earned cash to the farmers of the State. Again, it has been the means of distributing and popularizing some very fine and prolific varieties both of corn and cotton. Just a few years ago Marlboro Prolific Corn and Cleveland's Big Boll Cotton were not known, but now they are known all over the State, and are planted on a majority of the farms. Again, instead of the farmers demanding the variety test to be eliminated and something else substituted, the demand is, it should continue. It is the most popular experiment we have or are working out. It is a guide as to earliest and most prolificacy. The demand for an early, prolific variety of cotton is growing each year in view of the approaching dreaded boll weevil.

Another result of the station's variety test of cotton (the same is equally true

of corn) is, that the number of farmers who are gradually developing high-class seed farms is steadily increasing.

This is a most assuring sign of the times. In developing and in conducting such a farm, high ideals must control. The seeds produced and put on the market must be just exactly what they are advertised to be; in other words, the grower's word should be as good as his fidelity bond.

Again, I stress the importance of planting the very best variety of cotton obtainable, but be sure the variety you select has been thoroughly tested by disinterested parties or some one of the Southern Experiment Stations. There has been, and may be again, almost worthless varieties of cotton on the market under great claims that are not justified by an honest test. This station, in the past, has exposed some of these frauds, and it will be my pleasure to continue to do so as long as I am connected with it. There is a great difference in the yield of different varieties, also a difference in the same variety with different seasons and located in different parts of the cotton belt. Therefore, don't select a variety of cotton simply because it heads the list one year, but look back through a series of years and select that variety that has made the best average. By studying the tables, it will not be a difficult matter to select the variety that has made the best average at the station. I have known a variety of cotton that stood at the head of the list one year and the next year went to the bottom of the list tested. As I have stated, there is a great difference in the yield of different varieties of cotton. Sometimes, the difference is great enough to pay all the expenses of planting, fertilizing, cultivating and harvesting the crop. In the test for 1910, the difference in the yield of the best and poorest variety was more than enough to pay all the expenses of the crop from start to finish. The best variety made 2,256 pounds of seed cotton, while the poorest only made 1,489 pounds of seed cotton per acre. Estimating the seed cotton to be worth at that time .041-2 cents per pound, you

will see the difference in favor of the best variety to be \$34.41 per acre over the poorest variety. The cultivation and fertilization was precisely the same.

Some may say the price of cotton during the season of 1910 was out of proportion to the average price; to such, I refer them to the yield of the best and poorest varieties tested in 1911, also the price of good lint. The best in the 1911 test made 676 pounds of lint, while the poorest only made 442 pounds of lint. Calculating the difference of the price obtained for the lint (9 3-4 cents), we have \$22.72 per acre in favor of the best variety, making \$1,136.00 on fifty acres more than his neighbor that planted the poorest variety. It strikes me that sum, during these hard times, when everything is high-priced except cotton, is worth considering and saving. Understand, the treatment and expense were the same for both varieties. All were treated precisely the same from start to finish.

The test for the two years ought to convince any reasonable man that there is a great difference in favor of a high bred prolific variety over an unimproved variety. During both tests, the Cleveland strain heads the list in the production of both seed cotton and lint.

There was considerable difference in the yield of the varieties under the same name. Cleveland's Big Boll grown from station seed made 381 pounds of seed cotton per acre more than Steinheimer's Cleveland. Estimating the cotton to be worth 5 1-2 cents per pound, there is a difference of twenty dollars and ninety-five cents (\$20.95) in favor of Cleveland from our seed over the yield of Steinheimer's Cleveland—enough to pay for all the fertilizer and the cultivation.

LONG STAPLE COTTON.

At this time and in this immediate section there is not enough long staple grown to create a market. My experience has been the upland long staple is not prolific enough to make it a paying variety. Planted side by side under precisely the same treatment the short

staple prolific variety has always been the most profitable. It is true where there is a market for long staple it generally brings a much higher price than short staple. My advice to the farmers near a good long staple market is to adopt improved cultural methods and grow long staple varieties. But in the absence of a market where a premium is offered for long staple, I advise sticking to the best varieties of short staple, and by improved methods of culture and by concentrating the fertilizers and best energies on well prepared land increase the yield to a paying basis. There is no profit to the planter that only grows one-third of a bale to the acre at 15 cents per pound lint. If the one-third of a bale per acre farmer would reduce his acreage and concentrate his fertilizers and best energies in thoroughly repairing what he proposes to cultivate and make one bale per acre, he would make a small profit, otherwise he is farming or growing cotton at a loss.

As to the valuable varieties of corn, cotton and oats that have proved universally productive wherever given a fair chance, there are the Marlboro Prolific Corn, Appler Oats, Cleveland's Big Boll Cotton, besides others we could mention. For several years our experiments have shown these to be uniformly high yielders and the published results have attracted considerable attention and brought a large number of inquiries to the station for seed.

A just reputation secured by a variety of cotton may no more be sustained without great and persistent care than may a breed of race horses or dairy cows be kept up to its original excellence, without careful breeding, selection, and feeding.

"Eternal vigilance," it was said, "is the price of liberty;" so, also, it may be said that persistent and skillful selection and cultivation is the price of continued excellence in a variety of cotton. There is a constant tendency to revert, or go back, to a former and less excellent type.

Wannamaker's Pedigree-Toole Cotton Seed

The Purest and Best Bred Toole Cotton in the South Today



1913 Breeding Patch PEDIGREE-Toole and Originator, three-fourths of cotton already picked.

We believe Toole to be the very best and most prolific and productive of the small-bolled varieties. The fact that it is planted more largely than any other small-bolled variety by the farmers of South Carolina is good proof of the above statement.

Now, all kinds of Toole Cotton Seed sold as planting seed are not alike, save in name, which counts very little. If you take time to think, it is very, very easy to see that it is the continuous methodical breeding of cotton, or any plant, regardless of name or variety, that improves and reimproves it and makes it do its appointed work better and better and with more precision from year to year. The name may be correct, but, remember, that seed, though ginned pure and originally pure and productive, quickly deteriorate without reselection—or the mere growing and selling of the seed. No man should be justified in selling seed above that of the commercial article unless he has done some definite and effective breeding work

to make his seed more productive than that article, and to compensate the farmer for the extra money paid for them. After making a careful investigation into the merits of the different strains of Toole Seed sold by various parties in the South, and especially their breeding methods, we decided that a party by six years of excellent "Plant-to-Row" breeding had developed a far superior and more uniform strain of the Toole variety than any other breeder in the South; so we secured some of his best seed several years ago to make a start on at the highest possible point of breeding and to further improve ourselves. Toole has given most excellent results at all of the experiment stations, and in 1910 excelled 33 varieties at the Georgia Station in percentage of lint, turning out on an average 39.3 per cent. Our expectations have been more than met with by the yield, uniform appearance, and fruitage of this cotton, showing its careful breeding.

We paid \$5.00 per bushel for our first seed of this cotton in order to get the very best. They contained only about one per cent. of black or naked seed—most other so-called Toole seed are full of these. By careful field selection and plant-to-row breeding we have greatly improved this cotton, and our seed for sale this year contain less than one-half of one per cent. of black or bare seed. We follow the same system in breeding our Pedigree-Toole cotton seed as that already explained in breeding our Pedigree-Cleveland Big Boll. From our stalk-to-row test of 1911 we have developed two interesting types. Each is distinct from the other. One has small bolls and small seed, typical of the Toole, and is exceedingly prolific; the other has large bolls—almost as large as our Pedigree-Cleveland Big Boll—and slightly larger seed, and is also exceedingly prolific, but its most interesting point is that it is highly Storm Resistant, and much earlier. This year—1913—we had an acre each of these strains planted, and made a careful study of each to further improve. Two hundred to three hundred individuals were selected from each for our 1914 breeding patches and plant-to-row test. A most carefully conducted and accurate test of the two strains this year resulted in the Storm Proof Big Boll yielding 1,618 pounds of seed cotton per acre and the regular type 1,412 pounds per acre, a difference of 206 pounds per acre in favor of the former, besides its big boll and storm proof advantages. The percentages of lint were practically the same, being 38 per cent. from the two bales ginned from each of the acres planted. Besides other qualities the beauty of these seed is that they are absolutely pure and contain not one black seed. Our 1914 crop of PEDIGREE-Toole will be planted in these seed, each strain being planted in a separate field and picked separately. Another year will decide which is "all round" the best, one year's test not being sufficiently conclusive. The most important advantage of the Storm Proof Big Boll type, besides being storm-proof and big boll, is its earliness, being practically as early as our PEDIGREE-Cleveland. We will give further information about these strains next year.



View of 100 Acres PEDIGREE-Toole on Longstreet Farm.

Price of Our Pedigree-Toole Seed

We have 2,000 bushels of extra choice seed this year, grown on separate place (Longstreet) from our Cleveland, and ginned entirely separately. They are our latest improved seed and contain less than one-half of one per cent. of naked seed, or only one out of 250.

PRICES: \$1.50 per bushel; 10 bushel lots, \$1.40; 50 bushel lots, \$1.30; 100 bushel lots and above, \$1.25 per bushel f. o. b. All seed of best quality and put up in our new white branded cotton sacks. Your orders will receive our best attention.

Plant Description of Pedigree-Toole

We regret that we could not get photograph of type of plant of our PEDIGREE-Toole cotton this year, so give the following description: Plants of medium growth, spreading out as broad as high, with long limbs and many long fruit spurs, with fruit close and thickly set. Foliage light. Bolls medium size; easy to pick. Percentage of lint 38 to 40. Medium early. This description does not apply to our new strains of this cotton, already described, and not for sale the present year.

Comparison of Two Cottons

Both varieties have a wider range of adaptability than any other two varieties of today, and do well almost anywhere. Some farmers prefer the

Toole-type because they have been accustomed to planting the small-bolled cotton, and do not want to make a change. Some like the big boll because it is easier to pick, which is quite true. Both our PEDIGREE-Toole and PEDIGREE-Cleveland Big Boll have small weed-growth, and can be planted on either very rich or very poor land with best results; both—by our many and careful tests, which accord with those of Experiment Stations and Farmers—turn out practically the same percentage of lint—38 to 40—according to seasons, land, and condition of cotton when picked; which is as high as any good cotton in the South today. Others claim higher, but they are not founded on facts, nor do they show up at the Experiment Stations. Personally we think Toole better for light poor sandy land. Our PEDIGREE-Cleveland is, of course, the better of the two for boll-weevil territory—there is not as good a cotton in the South today with which to combat the boll-weevil, and we are making it better and better every year. We might also say—and the facts prove it to be true—that there is no better cotton than our PEDIGREE-Cleveland Big Boll in the world, boll-weevil or no boll-weevil. There is a distinct advantage in an early maturing cotton, provided it is productive, whether the boll-weevil be present or not. The cotton opens early and can be gathered more rapidly—especially when the bolls are large—during the long warm days of the fall (there is not much cotton picked by the darky when cold) and none is lost by early frosts.

See Testimonials in back of Catalogue.



PLANT ONLY THE BEST SEEDS

By COL. R. J. REDDING,

Director Georgia Experiment Station 1896 to 1907



It is not easy to overestimate the importance of planting seeds of only the best types of the various plants grown in the field and in the garden. Of course, field crops take precedence over ordinary domestic garden crops, because perhaps 99 per cent. of the farmer's capital, energies and outlays relate to the former. There was a time, and it is within the memory of this editor, when farmers generally gave scant attention to selecting corn, cotton, potatoes, peas, etc., being easily satisfied with seed that would "come up" and grow. Not one in ten made the slightest effort to improve by selection any farm or garden seeds. When corn planting time arrived the seed corn was selected from the bulk in the crib and attention was confined solely to the size and general appearance of the ears, without knowing whether a given ear grew on a two-eared stalk or was located high up or low down, or any other point. And so with cotton. Some farmers were thoughtful enough to reject the seed from the first picking and the last picking. The seed from the bulk of the crop were piled together and the crop was planted from the pile.

It was a rare occurrence for a farmer to make any effort at improvement.

A CHANGE FOR THE BETTER.

During the last thirty or forty years a great change has come over us in the matter of varieties of all field crops. The larger yields of corn and cotton—to say nothing of other crops—of late years are very largely, if not chiefly, due to improved and more productive varieties.

The great number of advertisements of farm seeds for sale attest this remarka-

ble change. But it remains a fact, however, that very many farmers have not yet been aroused on this subject, and still continue to plant, year after year, the same nondescript varieties that were handed down from their fathers and grandfathers; or, if they have made any progress at all, have been content to buy a few bushels of some advertised variety, "to get a start," and have continued without any special effort to improve on their first purchase, and have not even kept up any excellence by proper care in annual selections. Ten years ago he got some seeds of somebody's "Beat the World" or "Excelsior" or "Smith's Nonpareil," possibly from a neighbor who had been carelessly growing it for several years, and he still fancies that it is just as good as when he got it, when, in fact, it has completely run out, or gone back, and is no longer worthy to be classed as productive or excellent in any respect.

OFFICIAL TESTS OF VARIETIES OF CORN.

At the Georgia Experiment Station, of which I was director for seventeen years (1890 to 1907) very careful tests of current, advertised varieties of corn were made every year, especially with reference to yield of shelled corn per acre. In Bulletin No. 65 (1904) I made the careful comparison, covering a period of ten consecutive years (1895-1904) of the yields per acre of the best varieties of corn and the poorest varieties. The number of varieties annually tested during that ten-year period averaged about fifteen.

It should be borne in mind that the seed of these tested varieties, without exception, were supplied by the growers,

or promoters, as possessing superior merit and it was fair to assume that none were of low grade. The matter may not be made plainer than by giving the tabulated results as they appeared in Bulletin No. 65, as follows:

TABLE NO. IV.

A Comparison Between the Best and the Poorest Varieties of Corn for Ten Years.

Years.	Best Bushels Shelled Corn Per Acre.	Poorest Bushels Shelled Corn Per Acre.	Average of all Varieties, Bushel.	Diff. between Best and Poor- est, Bushel.	Value of Diff. at 80 cents per Bushel.
1	2	3	4	5	6
1895	45.55	38.41	40.60	7.14	\$5.71
1896	28.20	19.46	24.59	8.74	6.99
1897	38.98	24.60	31.81	14.33	11.16
1898	33.04	26.88	29.92	6.16	4.93
1899	22.33	10.40	17.70	119.3	9.54
1900	51.31	34.74	42.73	16.57	13.26
1901	27.38	14.32	19.32	13.06	10.45
1902*	12.95	8.00	8.82	9.35	7.48
1903	34.58	22.80	28.20	11.70	9.36
1904	26.00	16.24	20.88	9.26	7.41
Averages	32.02	21.15	26.40	10.87	8.70

*Very poor soil and a very dry season.

Very little, if any, explanation of the table is needed. It will be seen at once that the average difference between the yields of the best and poorest varieties of each of the ten years was 10.87 bushels of shelled corn per acre! The value of this difference, at 80c. per bushel, amounts to \$8.71, or at present retail prices, \$10.87. It is probable that this amount would pay all expenses of cultivation of one acre, including fertilizers.

OFFICIAL TESTS OF VARIETIES OF COTTON.

Covering the same period of ten years the same bulletin gives the result of a comparison of the yields of the best and poorest varieties of cotton and the value of the average of the differences of each of the ten years. The following is the tabular statement of the results:

Years.	No. of Varieties	Yield of Lint and Seeds Per Acre.		Values at 10c. for Lint, 80c. Seed.				
		Best Varieties		Poorest Varieties		Best Varieties	Poorest Varieties	Difference
		Lint.	Seed.	Lint.	Seed.			
1	2	3	4	5	6	7	8	9
1895 ..	18	511	991	300	688	\$59.03	\$35.50	\$23.53
1896 ..	20	705	1227	438	1162	80.31	53.09	27.22
1897 ..	21	516	937	365	716	59.25	42.23	17.02
1898 ..	30	782	1383	512	1128	89.26	60.22	29.04
1899 ..	25	423	852	346	747	49.11	40.57	8.54
1900 ..	21	624	1040	374	919	70.72	44.75	25.97
1901 ..	26	539	843	392	844	60.64	45.95	14.69
1902 ..	26	383	626	298	624	43.31	34.79	8.52
1903 ..	21	599	899	382	794	67.09	44.55	22.54
1904 ..	24	679	923	456	738	75.28	51.50	23.78
Avg's	23	576	974	386	836	\$65.40	\$45.32	\$20.08

Now, mind you, this was a test between improved varieties alone, seeds being supplied in every case by growers or promoters. The "poorest" were probably no better than ordinary, every-day seed—to the shame of the grower, or seller, and to the warning of the buyer.

Note that the value of the average difference between the best and poorest of each year, on the basis of only 10 cents for lint and \$16 per ton for seed, was \$20.08. Suppose you put lint at 13 cents and seed at \$30 per ton, the current prices, the difference of 190 pounds of lint and 138 pounds of seed would amount to \$26.77.

The report of the test in the bulletin goes on to make the following illustrative application of the test, on the basis of 10 cents for cotton and 80 cents for seed:

Suppose that two farmers of equal skill and industry should each plant and cultivate each year for ten years 100 acres of land of precisely the same highly productive quality, in exactly the same manner and with the same amounts and kinds of fertilizers, have the same weather conditions, the only difference being that the one farmer planted every year seeds of the best variety, and the other planted only seeds of the poorest variety tested.

A very little calculation will show that the farmer planting only of the best variety will have annually secured \$2,000 worth more cotton from his 100 acres than his neighbor who planted

only ordinary cotton; or in the ten years the first will have secured \$20,000 more—enough to buy out his less fortunate neighbor's 100 acres at \$50 per acre, and have \$15,000 left. Doesn't that surprise you, reader?

OTHER FIELD AND GARDEN SEEDS.

The same comparisons might have been made with several other field and garden crops with correspondingly striking results, particularly with oats, sweet potatoes and Irish potatoes. Even more striking results might follow a long course of testing of many of the varieties of garden seeds.

WHAT SHOULD EVERY FARMER DO?

A farmer who has paid no attention to varieties, or has planted seeds of the same variety year after year without exercising especial care in selecting every year seeds the best yielders—whether of corn, cotton or other crops from seed—may be sure that his seeds need renewing and should at once buy at least enough seed of the most productive and

otherwise desirable varieties to enable him to plant the entire area to be devoted to a particular crop by the next succeeding year. I would not advise any farmer to try to improve a scrub variety of corn, cotton or any other crop by his own efforts.

The proper plan is to get at least a few ears or a few bushels of the very best strain he can possibly find and discard the scrub stock at once, or so far as not to save a single seed for planting after another year. He may then commence a plan of selecting a few of the best stalks for the area grown from the purchased seed, select the best bolls from these stalks and thus secure seed enough to plant an acre, or an area sufficient to produce seed for his entire crop the following year.

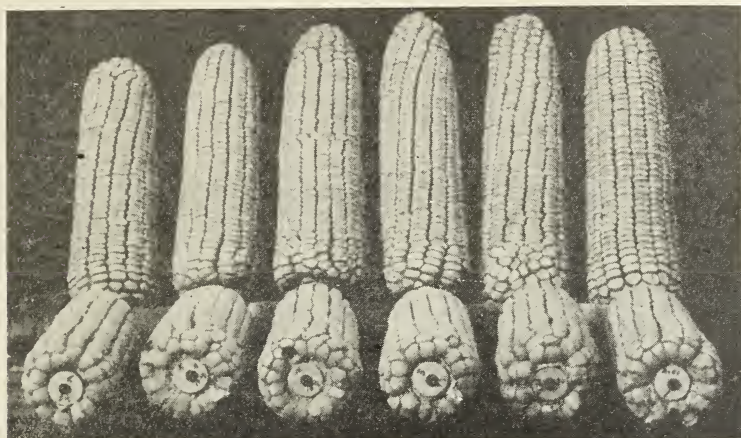
I repeat it—don't try to improve a scrub variety of anything, but begin with the best you can find.

R. J. REDDING.

Griffin, Ga.

Wannamaker's Marlboro Two-Ear Seed Corn

The Tested Champion and Blue Ribbon Variety of the South



Six pairs of ears of our Marlboro Two-Ear crossed in breeding patch in 1911. The ears above and below each other are from the same stalk.

General Description of Plants

Stalks of medium height and size, stout, with short joints; foliage medium; ears of medium height from ground, two good ones of equal size per stalk; grain white to cream, medium hard and of best quality; cobs white.

In 1910 at the Georgia Experiment Station tests of fifteen prominent varieties our seed corn (Wannamaker's Marlboro) excelled both the famous Batts 4-ear and the originator's Marlboro himself in both "bushels of grain per acre" and "percentage of grain." The South Carolina Experiment Station has also found the Marlboro to be the most uniformly productive of all varieties grown in the South, as well as other Experiment Stations, and it is the most widely planted variety by the farmers of South Carolina and Georgia and other Southern States.

Extract from letter and bulletin of the Georgia Station:

"We have repeatedly tested 'Boon County White' corn. To tell you the truth, we don't think much of it as a general purpose corn for this section. If you have a file of our bulletins, and will take the time to look through them, you will see how it stood in the variety test under the most favorable conditions.

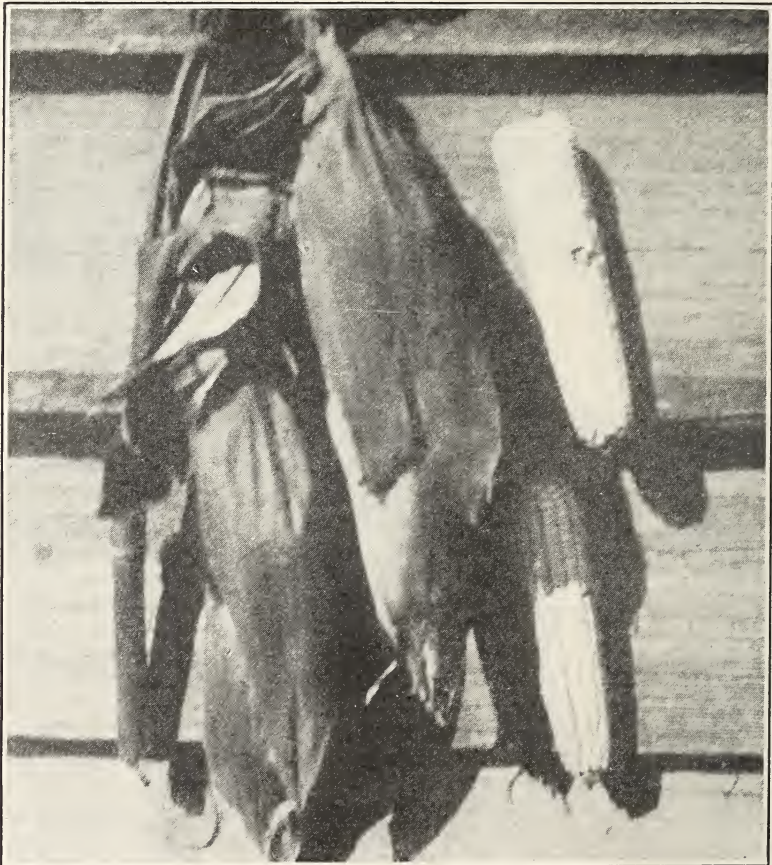
"As a rule, seed corn from the Northern and Northwestern States does not yield satisfactorily in this section.

"A safe rule for the corn growers of the State is to select their own seed corn from their own fields or buy seed grown in their section of the country by a careful and intelligent seed grower—a grower who makes a specialty of seed corn."

We quote the following from the "Progressive Farmer":

One-Eared or Prolific Corn. Which?

"All will agree that the most important point to be considered in corn is the production per acre. In other words, the yield of shelled corn is of far greater importance than any other consideration in the growing of corn. Indeed, it is almost the sole consideration. Now, the experiments of all the



Our Two-Eared Seed Corn—Two Good Ears of Equal Size Per Stalk.

Southern Experiment Stations, conducted for a long series of years, and with a very large number of varieties, show beyond question that the prolific varieties yield more corn per acre under conditions made as nearly alike as it is practicable to make them. The larger yield of the prolific varieties—or those having the habit of producing two or more ears to the stalk—is sufficiently pronounced to leave no doubt as to which is the best for the South if grain is the object sought, and in corn growing in the South this is certainly the object.

"The one-eared varieties produce larger ears, but instead of the extra large ears being an evidence of superiority, it is an evidence of inferiority for the purpose for which corn is generally grown—the grain.

"We cannot go back of the records of facts, and have no hesitation in stating that the proof is ample that the prolific varieties of corn are best for the South because they produce more corn."

The other Experiment Stations have also repeatedly proven the above. So stick to your well-bred native varieties and do not be misled by the pretty show corn of the West; for it is not pretty corn that you want, but corn that when planted will produce "bushels of grain of good quality"—and you will get neither of these with unacclimatized Western varieties.

Our ideal corn is one that will uniformly produce two good ears of equal size per stalk under average conditions of soil, fertilization and distance; and if the seasons are high, fertility of the soil, fertilization, or distance great, it will adapt itself and produce three good ears, or even four, per stalk. We have good reasons—which are evident—to believe that a two-earned corn will outyield one that is extremely prolific, taking the seasons as they come. Besides, the harvesting and handling of large ears is both cheaper and more convenient.

We began our corn breeding in 1909 with twenty-five of the best individuals of the best strain of Marlboro we could find, after a painstaking and careful search of a great number. Each of these ears we planted on separate rows—twenty-five in all—two acres long, and fertilized and cultivated them identically; and when thoroughly dry harvested and weighed each row separately, with the somewhat surprising result that the lowest yielding ear yielded at the rate of only 45½ bushels per acre and the highest at the rate of 60.3 bushels per acre—quite a difference in bushels per acre. The four ears that yielded at the rate of 60.3, 59.3, 58.1 and 56.7 bushels per acre we crossed in an isolated Breeding Patch. In 1911 we had 60 pairs of ears in our Ear-To-Row Test. Each pair were taken from stalks in the field having an equal opportunity of distance, soil and fertilization with their neighbors, but much higher yielding on account of heredity. Stalks were given preference that had two good ears as equal in size as it was possible to get. Of course the height of ear and stalk was also taken into consideration. See photograph of some of these ears we used for crossing. The corn that we offer to the public this year was multiplied and reselected from the best yielding of these 60 pairs of ears. We harvested a fine crop this year of the best quality. We do not promise you that our seed will grow all pretty ears of corn. Our main object has been yield or Bushels Per Acre of good quality. Our highest yielding ears have been by no means

always our prettiest. You have observed that the prettiest people seldom do either the best or the most work in this life. Well, the same applies especially to ears of corn.

Price of Our Marlboro Two-Ear Seed Corn

\$3.00 Per Bushel, any quantity, shelled.

\$1.00 Per Peck, shelled.

We can also furnish choice ears at \$1.50 per Peck (18 pounds) and \$5.00 per Bushel (70 pounds.)

All corn from latest improved seed; shelled corn carefully selected, butted, and tipped; and put up in our new strong white peck and one bushel branded cotton sacks. Your orders will receive our best attention. Shelled corn is carefully selected and will give about the same results in field as that sold on ear, although the latter is more choice. The ear-corn represents about 5 per cent. of crop; the shelled about 20 per cent. Both have the same blood.

Cultivation of Corn

Since planting the two-ear prolific corn and adopting a modification of the Williamson Plan of Corn Culture (write to South Carolina Experiment Station, Clemson College, S. C., for complete copy of this excellent Method) our yield of corn has been half as much again, and with the same land and fertilizer. In 1909 on a twenty-acre field of only average fertility, with rows six feet apart, plants two feet apart, and only six hundred (\$6.00 worth) pounds of meal, acid, and kainit, we averaged fifty bushels of solid corn per acre, the cheap yield being almost entirely due to the prolific corn and late application of fertilizers. As to chief sources of failure in making a good corn crop, we quote the following from David Dickson, which cannot be improved on:—

“1st. Not keeping a sufficient quantity of vegetable mold in the land.

“2nd. Ploughing too shallow in preparing for the crop.

“3rd. Planting too thick.

“4th. Cultivating too deep.”

To these we will add at this date:

5th. Williamson Plan of Preparation, and fertilization.

There is no need of discussing 1st, 2nd and 4th—they are evident. But planting too thick, especially with prolific varieties, has been carried to extremes of late years. Taking average land, and the average season for a period of ten years there is not enough rainfall to produce more than fifty bushels of corn per acre, and this is a mighty good yield on an average for such a period. Why, then, plant corn thicker than it is needed to make this yield? It is folly, and you are gambling with the weather, and you will most likely, at best, make a pile of nubbins, and if drouth comes you will make practically nothing. There is no better width of row than six foot rows, and if you want 30 to 40 bushels plant 2 ft. apart, 50 to 60, 18 in. apart; and, if you want to risk 75, 1 ft. apart in row. Prolific corn should

not be planted too thick for best results—if so, it only produces one ear, or one ear and a nubbin per stalk, instead of two good ears or more, as intended by nature; and stalks all out of proportion to grain. Prolific corn is best because it produces, when given correct distance, more grain in proportion to stalk than the one-eared varieties, and that is what we want in the South, where there is a tendency to too much stalk growth. Besides, the prolific variety adapts itself to the seasons, soil, and fertilization, and either makes one, two, three, or even four ears per stalk as the conditions are favorable or unfavorable for same—this is common sense, proved repeatedly by the tests of all the Experiment Stations of the South that the prolific corn is the most productive. The Williamson plan of bedding up and planting low is the best. We do not practice his method of stunting, but only apply the fertilizer after planting, when the corn is about two feet

Our 1913 Corn Breeding Work and Ear-to-Row Test



1913 100-Ear-to-Row Test, 100 Rows, $2\frac{1}{2}$ Acres, Harvesting and Weighing.

high. If land is very poor, it needs a little fertilizer (about 50 to 100 pounds) under it to start corn off, and in order to start corn off. If land is very, very rich—and you know when to stop—perhaps, stunting will help. Do not fail to plant peas thick in corn at laying-by time, and lay-by early. More corn is injured by laying-by late than helped, and you need the time for your cotton and other crops.

"Theories as to what is a good ear of corn are of little value, as some ears have a productive power of many bushels more per acre than other ears that look as good or better. No one living today, who has made a careful study of corn, can say what type of ear or of kernel is the one that will produce the greater number of bushels per acre. The farmer for the past 300 years has arbitrarily chosen a type of ears that suited his idea as a good ear, not giving nature a chance to select the ears that will yield the greater number of bushels per acre. Is it not time that we let nature co-operate with us in selecting the best corn that will yield the most bushels per acre, remembering that the best ear of corn is the one that will produce the most bushels per acre of shelled corn of best quality; and not the ear that will shell the greatest per cent., nor the ear that will win in the show ring? The best looking ears are usually not the best for seed. It is only the Ear-To-Row test that will show us the highest yielding ears by weighing nature's producing power of each ear planted on separate row."

The 100 years of corn that we chose for our 1913 Ear-To-Row Test were previously field selected and were as good as it was possible for the eye to choose. Twenty were selected from our Breeding Patch of 1912, 47 from our general fields, and 33 from one bushel of Select ear-corn of Marlboro Prolific obtained from one of the best and most careful breeders of this corn in the South, who has been breeding along similar lines to us, that is, two good ears of equal size per stalk. All ears were selected as near alike in type as possible, just as one would select for Breeding Patch, so as to have a uniform type of corn of the highest yielding rows for planting in 1914, until remnants of highest yielders could be multiplied. A uniform piece of land was selected for test, and rows laid off 4 feet apart and hills checked 3 feet apart, making 12 square feet for each plant. Would have planted 6 by 2, but land selected would not hold 100 rows of this width. Each ear was numbered from 1 to 100 to correspond to the number of its row, 300 feet long, and exactly two grains dropped in each check, only about one-half of each ear being used for test; the other half reserved carefully for future use. By planting two grains per hill, setting out few missing places with extra plants, with post-hole digger, and thinning to one later, a perfect stand of healthy plants was secured. Each row was fertilized and cultivated identically and like our general crop.

Record of Ear-to-Row Test of 1913

Ear Number.	Bushels Per Acre.	Ear No.	Bushels Per Acre.	Ear No.	Bushels Per Acre.	Ear No.	Bushels Per Acre.
1	48.57	26	52.00*	51	47.43	76	42.84
2	49.14*	27	46.85	52	52.00	77	53.15*
3	46.85	28	45.71	53	48.00*	78	50.29
4	42.85*	29	52.58*	54	46.85	79	48.57
5	41.71	30	42.84	55	44.57	80	46.85
6	44.57	31	48.00	56	49.71	81	48.57
7	45.71	32	48.00*	57	46.28	82	54.29*
8	48.00	33	49.14*	58	48.57	83	44.57
9	50.86	34	46.85*	59	45.71	84	46.28
10	47.43	35	41.14	60	52.00	85	46.85
11	50.86*	36	48.00	61	49.71	86	48.57
12	52.88*	37	46.85	62	45.71	87	45.71
13	44.57	38	41.71	63	41.14	88	50.86
14	47.43*	39	41.14	64	49.14	89	48.57
15	41.14	40	42.27	65	52.00*	90	47.43
16	46.85	41	46.28*	66	45.71	91	54.86*
17	49.71*	42	51.43	67	55.43*	92	44.57
18	50.86	43	52.00*	68	42.27	93	42.28
19	43.99*	44	53.72*	69	49.71	94	51.43
20	42.27	45	46.85	70	50.29*	95	45.71
21	36.55	46	48.00	71	53.72*	96	31.41
22	49.71*	47	53.72	72	46.85	97	56.58*
23	48.00	48	50.29	73	49.14	98	49.71
24	35.41	49	54.86*	74	47.43*	99	42.28
25	53.72*	50	53.15*	75	41.14	100	53.15*

The 20 ears selected from breeding patch, 47 selected from general fields, and 33 selected from Select foreign Marlboro Two-Ear corn were evenly distributed throughout test plat, the 33 ears being planted as multiples of 3—on rows 3, 6, 9, etc., 20 ears on rows 1, 5, 10, 14, etc., and 47 ears on rows 2, 4, 7, etc. This was done to get accurate average yield of each lot of ears, and to introduce new blood of foreign Select Marlboro into our own corn, crossing with new blood being considered conducive to higher future yield.

The average yield of all ears was..... 47.05 bushels per acre
 The average yield of breeding patch ears was..... 47.72 bushels per acre
 The average yield of general field ears was..... 49.14 bushels per acre
 The average yield of both breeding patch and general field ears was..... 48.40 bushels per acre
 The average yield of foreign select ears was 45.71 bushels per acre

A difference in favor of home over foreign of..... 2.69 bushels per acre

The highest yielding row made..... 56.58 bushels per acre
 The lowest yielding row made only..... 31.41 bushels per acre

A difference of 25.17 bushels per acre



30 Best Yielding Rows selected, after thorough study, and sacked for further inside study.

Considering every point, yield of best quality being given first consideration, 30 of the best "All-Round" rows were selected and sacked, as per photograph, for future inside study. These rows are indicated in table by stars.

As we have not yet had time to furnish more critical study of 30 best rows chosen from piles at harvesting time, we cannot say which we will choose for further increase, or which remnants will be chosen for isolated breeding plot. We will give you these results in our next year's Catalogue.

The Best ears from the Best 10 "All-Round" rows will be used in our Multiplying Field this spring—1914—for sale another season.

The Remnants—pure and free from crossing with inferior rows in test plat—from the Best 2 or more "All-Round" Yielding Ears will be crossed in an ISOLATED Breeding Plot in 1914, and enough seed of these will be multiplied in 1915 for sale for the corn crop of 1916. We know of some corn breeders in this State that use only one ear for this purpose, which is quite wrong. It is conceded by the best students of corn breeding, and especially practical breeders, that this is inbreeding and will greatly reduce the yield, though it might in a shorter time produce mere pretty ears for the show ring—the farmer wants yield.

The Original Remnants of the Best 2 or more "All-Round" Yielding Ears



Progeny of Highest Yielding Ear, Showing Two Good Ears of Equal Size per Stalk.

and their progeny are superior because they are free from the certain cross-pollination that takes place between the progeny of the half of ears of the Best 10 "All-Round" rows and inferior rows that may chance to be growing by or sandwiched between. However, in making selection of corn for seed another year, those rows having such a position will not be chosen for Multiplying Field. Besides, as stated above, all the corn was of as uniform a type as it was possible to choose.

We feel that the public will appreciate the class of work we are doing in breeding corn and cotton for greatest yield of best quality per acre, and the carefulness, fitness, time and energy required for the proper carrying out of such work.

See Testimonials in back of Catalogue.

Henry Ward Beecher's Farm Creed

We believe that soil likes to eat as well as its owner, and ought, therefore, to be liberally fed.

We believe in large crops which leave the land better than they found it—making the farmer and the farm both glad at once.

We believe in going to the bottom of things and, therefore, in deep plowing and enough of it. All the better with a subsoil plow.

We believe that every farm should own a good farmer.

We believe that the best fertilizer for any soil is a spirit of industry, enterprise, and intelligence. Without this, lime and gypsum, bones and green manure, marl and guano, will be of little use.

We believe in good fences, good barns, good farm houses, good stock, good orchards, and children enough to gather the fruit.

We believe in a clean kitchen, a neat wife in it, a spinning wheel, a clean cupboard, a clean dairy, and a clean conscience.

We firmly disbelieve in farmers that will not improve; in farms that grow poorer every year; in starving cattle; in farmers' boys turning into clerks and merchants; in farmers' daughters unwilling to work, and in all farmers ashamed of their vocation or who drink whiskey until honest people are ashamed of them.—Henry Ward Beecher.

Wannamaker's Improved Appler Seed Oats

"The Best for the South"



Grading, Sacking and Weighing Seed Oats on MODEL SEED FARM.

Improved and Grown Only from Selected (Fanned and Screened) Stock.
—The original Appler Oats were selected and greatly improved from the Texas Rust Proof by a man by the name of "Appler." His method was to go through his field of the original and inferior Texas Rust Proof and select the most superior and exceptionally prolific individuals (stools)—the most healthy stools, having the greatest number of strong stalks, and largest and heaviest heads. These he planted in a separate field apart from other grain to multiply and keep the seed pure, and thus by still further annual selection and weeding out, secured a strain of oats without an equal in productivity and rust resistance in the South today. There are many "*nom de plumes*" (new names) applied for effect to the real "Appler Oat" by various seed houses and individuals, but there is no difference in the oats except the new name—a "catch-word" for higher prices.

No farmer should, and only the careless farmer, equally careless of results, will take the chances on planting cheap Western Oats or seed grown from this inferior stock in the South. These oats are grown care-

lessly for feed, not seed, and are not acclimated to our soil and climate, therefore they yield but poorly compared to our native and improved strain, "Appler." Remember, it is blood that counts more than mere outside looks or appearances.

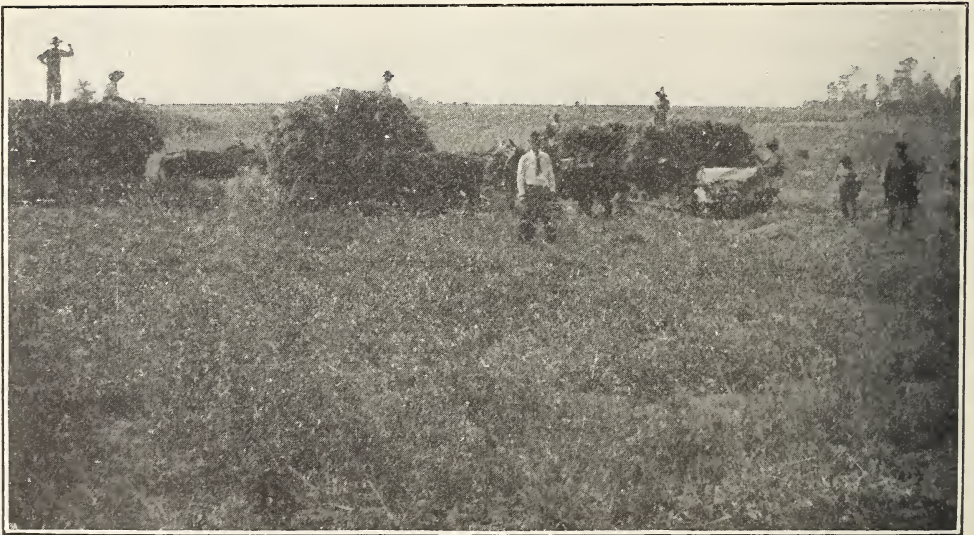
Our strain of Applers, which were originally obtained from headquarters, we have annually greatly improved by fanning and screening out all small and inferior seed; and we have our own threshing outfit, which prevents mixture with inferior oats of other varieties or grain of wheat or rye. Oats are put up in new strong sacks, which are securely and plainly marked so that they will reach their destination safely and without delay or waste.

PRICE of Latest Improved Seed Oats

\$1.00 Per Bushel f. o. b.

Put up in our new 5 bushel branded sacks. Your orders will receive our prompt and best attention.

Best Crop to Follow and Preparation of Land.—Oats should invariably follow a cow-pea crop or a crop of corn in which peas have been planted. This alone will increase your chances of making a good oat crop many times; for the pea roots, which penetrate very deep into the soil and sub-soil, not only loosen it up and make it more easy of preparation, and penetration by the fine fibrous roots of the oat plant, but they also when decaying furnish valuable plant food, especially nitrogen, for the oat crop. By all means prepare the land good, fine and level, and about six to eight inches deep. The drill will put all the seed in at an even depth; they will



Harvesting Seed Oats on MODEL SEED FARM.

all with ease come up at the same time; stand the winter freezes better; their roots will penetrate and feed more easily through the loose deep soil, which will hold more moisture; and all the plants will grow evenly and with less difficulty and reach maturity at the same time—this latter very important in all grain crops. Loose sandy soils will take less, stiff cloddy lands more work in preparation; both more if they are rough with coarse vegetable matter. First plow the land and then use the disc or cutaway barrow for cutting up the vegetable matter and mixing it with and settling the soil; then follow with the smoothing harrow to further fine and to level.

Seed.—Do not throw away money on and in preparing good land by planting “feed or an inferior strain of oats” because they cost a few cents less per bushel. Your loss at harvest time will be many times greater and there will be less satisfaction. When not out of reason, the price is not to be considered if you can get really good seed of any kind; and then you take more pride in them and prepare and fertilize your land better for them, and for this reason also make better crops.

Planting and Fertilization.—If possible, plant with a grain drill anywhere from the first of October to the middle of November (not later, if you expect a high yield) not less than two bushels per acre on poor land and as many as two and one-half to three bushels on rich land. The earlier planting, having more time to spread, requires less grain per acre; and the later planting more, because of less time to stool. It would be incorrect and mere guess work for us to prescribe any fixed fertilizer formula for any one, not knowing the character of their land and its previous treatment. Generally, on poor sandy land equal portions of nitrogen, phosphoric acid and potash give good results; and on rich or very rich land two to three times as much phosphoric acid as nitrogen and potash; clay land requiring less potash and sandy land more. It is unprofitable to apply ammonia at planting time unless the oat crop is not preceded by a good pea crop or the land is such or so extremely poor that it will not bring good peas—in which latter case it were better to apply some fertilizer to the peas themselves and make the land bring them,—if you want oats. If it is convenient, it is better to apply all phosphoric acid and a part of potash at planting time and all organic ammonia (meal, fish-scrap, etc.) if this is needed. Nitrate of soda is the very cheapest form of ammonia and is of the greatest importance in making a good crop of oats. It is generally more profitable to make two applications, if one hundred or more pounds per acre is used; if less is used, apply all at one time about the latter part of March. We usually use as a source of ammonia for oats only nitrate of soda—one hundred and fifty pounds per acre—fifty pounds of which, mixed with fifty pounds of muriate of potash, we apply by hand or with broadcaster during the latter half of February, and the remaining hundred pounds the latter half of March. It is as hard to foretell the seasons as to tell exactly when to apply nitrate of soda for the very best results, but it is better to apply a little early to any crop rather than too late, and to oats before they begin to run up for heading.



Stacking Oats on MODEL SEED FARM.

Harvesting.—An eight-foot binder will harvest in one season before they begin to fall down badly about seventy-five acres of oats. Begin to cut when about seven-eighths of the heads are ripe (yellow). One day of real good sunshine on oats cut when dead ripe is sufficient, rather than risk them in the weather. When not so ripe let them stay out two to four days. Four bundles to a shock is the best number. Lose no time and concentrate everybody and everything in getting them in out of the weather as soon as the heads have dried out enough. If done properly and when heads are dry enough to prevent heating oats can be stacked in the open without danger of damage by the weather. However, if you have convenient shelter get them in there without delay, until you learn to stack them both quickly and safely. In making the stack—either a round or house-shaped one—the butts of the outside bundles should be inclined downward to shed the rain. Keep the middle of the stack well packed, but simply lay the outside circle of bundles on a little inclined downward, and when the stack settles these will incline still more and shed the water better. Don't make too large a stack, for such is more liable to heat and be damaged while being put up perchance it rains.

The Ten Commandments of Agriculture

By the Late Dr. Seaman A. Knapp.

- (1) Prepare a deep and thoroughly pulverized seed-bed, well drained; break in the fall to a depth of 8, 10, or 12 inches, according to the soil, with implements that will not bring too much of the subsoil to the surface. The foregoing depths should be reached gradually.
- (2) Use seed of the best variety, intelligently selected and carefully stored.
- (3) In cultivated crops give the rows and the plants in the rows a space suited to the plant, the soil and the climate.
- (4) Use intensive tillage during the growing period of the crops.
- (5) Secure a high content of humus in the soil by the use of legumes, barnyard manure, farm refuse, and commercial fertilizers.
- (6) Carry out a systematic crop rotation with a winter cover crop.
- (7) Accomplish more work in a day by using more horsepower and better implements.
- (8) Increase the farm stock to the extent of utilizing all the waste products and idle lands of the farm.
- (9) Produce all the food required for the men and animals on the farm.
- (10) Keep an account of each farm product, in order to know from which the gain or loss arises.

TESTIMONIALS

What Some of the Most Practical, Successful and Experienced Farmers Have to Say.

Your esteemed favor of recent date, asking for the standing of your Wannamaker Pedigree-Cleveland Big Boll cotton received, and I beg to say that it stands at the head of the list.

JAMES M. KIMBROUGH.

Ga. Exp. Sta., Dec. 22, 1913.

The cotton seed, Wannamaker's Cleveland Big Boll, bought of you a year or two since, has proven very satisfactory. I believe very strongly in seed selection. Your plan of selecting seed is a good one. I believe the Cleveland Big Boll, if properly selected from year to year, will be made—if it is not already—the best variety of cotton grown in this section of the country. I believe greatly in the

best variety of seeds of all kinds. Please ship me via Augusta 50 bushels of your best and latest improved seed.

JAMES M. SMITH.

Smithonia, Ga., Oct. 5, 21 and Nov. 6, 1913.

I have purchased cotton seed from you for the last two seasons and they have proved satisfactory in every respect, especially the Pedigree-Cleveland Big Boll that I bought from you last season. I had about become disgusted with big boll cottons, as they had not done well with me, but I am glad to say your Cleveland came up to my expectations in every respect. On two acres I made three bales of cotton, although I did not get a stand until June, but it

opened early and outyielded any other cotton I had by 20 per cent. Please ship me three bushels of your best selection. I want these for my seed patch.

R. Y. TURNER.

Winnsboro, S. C., Nov. 4, 1913.

The Wannamaker-Cleveland cotton is the best cotton I have ever planted, and I have tested fifteen varieties for two years. It will produce more seed cotton per acre by two to five hundred pounds than other cottons, and will yield 38 per cent. of lint. I tested the Wannamaker-Cleveland with the pure Cleveland cotton this year, and find the difference in them all that they claim for them. Hands will pick far more in it than in small-bolled cotton.

B. D. FUNCHESS.

Orangeburg, S. C., Dec. 7, 1913.

It is with pleasure I state that I have given your Toole cotton seed a fair trial this year and am well pleased with same.

W. J. PRICE.

St. Matthews, S. C., Dec. 5, 1913.

The Cleveland Big Boll cotton seed purchased of you has given entire satisfaction. The bolls are numerous and large, the cotton easy to pick and leads in the per cent. of lint. I consider it the best short staple cotton that I can plant on my lands. I have recommended your Cleveland Big Boll and Toole cottons in practically every county in my district, and I find wherever the parties secured seed from you, and a fair test has been made, that these cottons are making greater yields than any other varieties, and the farmers are anxious to secure the seed.

L. L. BAKER,

District Agent.

Bishopville, S. C., 1912 and 1913.

We like the seed we bought from you all right. The seed seemed to be the nearest just one thing we ever saw, and the plants are just like peas in a pod.

FAIR VIEW FARM.

Dec. 2, 1913.

Your letter of the 7th inst. received. Wannamaker's Cleveland Big Boll cotton made the best yield of all the varieties in our test, 1,412 pounds seed cotton per acre and 480 pounds lint. You have a splendid cotton. One of our

plantations was planted in it this year and made almost a bale of cotton per acre. The size of plats in our test was eighth of an acre.

Your Pedigree-Cleveland is showing up well at the Delta Experiment Station this year, 1913, both as to yield and earliness.

W. R. PERKINS.

Supt. Delta Farms Co.

Deeson, Miss., 1912-1913.

We made up an order for 100 bushels of your Pedigree-Cleveland Big Boll cotton seed last spring. Everybody that got any of it was well pleased. One farmer, Mr. John M. Nixsen, made twenty good bales on ten acres. He is a large farmer, with good practical judgment, and he pronounced it the best cotton he has ever planted. Will you kindly send your catalogue to Mr. Geo. McElveen, this place. He wants some Toole seed.

T. OLIN EPPS,

Demonstration Agent.

Kingstree, S. C., Dec. 22, 1913.

Last year we ordered one bushel of your Wannamaker-Toole cotton seed, which has given us thorough satisfaction. With 600 pounds of fertilizers it produced by weight 1,900 pounds seed cotton. We believe that good seed are well worth the money that you ask, which we prove by our recent order of 25 bushels of your Cleveland.

H. C. CRUM & BRO.

Denmark, S. C., Dec. 22, 1913.

Your Pedigree-Cleveland cotton is just the best cotton that has ever been planted in this section. I made this year with your Pedigree-Cleveland 680 pounds lint cotton per acre, with only 700 pounds fertilizer. I have planted most of the leading varieties of cotton, and find yours by odds the best I have ever planted. I do not believe there is a higher bred cotton in the belt today; it is almost perfection in cotton. Two of its greatest features is its high per cent. of lint and ease of gathering, and I find it stands in the field remarkably well. Any one wanting an ideal "All Round" cotton should not hesitate in buying yours, and I would consider them cheap at \$5.00 per bushel if they could

not be had cheaper. I shall get some more seed from you this season.

D. L. GIBBS.

Lynchburg, S. C., Dec. 4, 1913.

I planted the Wannamaker Pedigree-Cleveland Big Boll cotton this spring. The hail destroyed the stand to about one-half, but I made a bale per acre. I think the Cleveland will supersede all other varieties in this section of Georgia.

T. M. MANLY.

Griffin, Ga., Dec. 4, 1913.

I beg to say that I liked your Pedigree-Cleveland Big Boll fine, and would like to have a few more bushels for next year. Also some of your corn.

ED L. DURDEN.

Wade, Ga., Dec. 6, 1913.

I wish to state that the Two-Ear Marlboro corn bought of you this season gave good results and was highly satisfactory. The Toole cotton seed bought of you produced the best on my farm. The balance of my crop was planted in Toole seed bought from another source, but I expect to plant my entire crop another year in your Toole.

C. C. EDWARDS.

Chester, S. C., Dec. 6, 1913.

I planted your Marlboro Two-Ear corn this year and am well pleased with it. Expect to plant it another year.

L. M. WEST.

Camden, S. C., Dec. 6, 1913.

I planted twenty-nine acres of your Select Toole cotton seed this year. The cotton grew beautifully and fruited finely. A very hot and dry season in August caused the cotton to shed freely, but left enough to make over a bale per acre. Think a bale and a half would have been gathered if there had been no drought in August. I think the seed a great success.

J. A. BANKS,

Ex-Pres. State Fair.

St. Matthews, S. C.

I planted some of your Pedigree-Cleveland Big Boll cotton this year, and was greatly pleased with the results. It made a fine crop. I consider it the best cotton I have ever planted. Am

a great advocate of seed selection, and have selected from the best stalks my planting seed.

O. E. TATE.

Elberton, Ga., Oct. 26, 1911.

Your Cleveland Cotton did extra well. It is the best cotton I have ever seen for such an unusually wet season. The stalks are uniform, the fruit is close and the fibre good. Made 40 per cent. lint.

J. H. M. WHITMIRE.

West Union, S. C., Jan. 19, 1913.

Replying to your favor of recent date, will say I liked your cotton seed that I bought of you this past spring all right. They gave me very good results, and I would be glad for you to give me your lowest prices on seed for this season.

JAS W. MCINTOSH.

Laurinburg, N. C., Jan. 22, 1913.

I bought corn of you last year. It was fine. I am giving the best encouragement for all of your seed I can, because I believe you will treat your customers honestly and give them the right seed.

Please ship me two bushels of your especially selected Cleveland Big Boll cotton, and two bushels of your Marlboro Seed corn shelled.

Check for \$11 enclosed.

S. F. OWEN.

Pinehurst, Ga., March 8, 1912.

I was entirely pleased with the Toole Cotton Seed I bought from you last season. It bore excellent and was healthy throughout its growth. I should like to buy more fresh seed from you this season.

C. ST. G. SINKLER.

Eutawville, S. C. Jan. 20, 1913.

The quality of your seed has always pleased me. I expect to order more.

GRATZ DENT.

Jan. 16, 1913.

It gives me pleasure to say that I have obtained excellent results from your Pedigree-Toole cotton, including Pedigree-Cleveland Big Boll, bought of you last year. I think they are both splendid varieties, and your strains about the best I have seen.

E. F. MURRAY.

Laurinburg, N. C., Jan. 14, 1913.

I was pleased with seed bought from you last spring. The five bushels of Two-Eared Marlboro corn was planted by Mr. J. C. Gary and myself, and we were well pleased with same. Think it is as near a Two-Eared corn as we could get.

W. P. SMITH.

Kinards, S. C., Dec. 9, 1913.

Your Marlboro Two-Eared Seed corn proved very satisfactory with us. We had a fine average yield from our entire crop, and on one acre that we gave some extra attention, we gathered 93 1-2 bushels. Taking everything into consideration, we consider that you have a very desirable variety.

WARE SHOALS MFG. CO.

Dec. 8, 1913.

Please send us a catalogue of and the kind of cotton seed you shipped us in the spring of this year. This cotton is something fierce. We want to know more about it. We have a trial patch and stalks carrying 300 to 400 bolls.

M. S. BAILEY & SONS.

Clinton, S. C., Sept. 9, 1913.

(Note:—These seed were Pedigree-Cleveland Big Boll.)

Last spring I bought of you some of your Cleveland Big Boll cotton seed. I was real well pleased with the seed. I planted three acres and made three full bales of cotton. I don't think I have seen stalks of cotton more heavily balled than this cotton was. Please send me one bushel of your Pedigree-Toole and four of your best Pedigree-Cleveland Quality, not quantity, is what I want.

P. S.—I have planted the Cleveland for several years, but think yours was better and more crowded with bolls than any of the others.

G. S. MITCHELL.

New Albany, Miss, Dec. 11, 1913.

I am well pleased with the Pedigree-Cleveland Big Boll cotton seed bought of you last spring. I believe it is the best big boll cotton I have ever seen, and it makes more lint than any big boll cotton I have ever planted. Made an average of 37 per cent., and I didn't get it

up until the 1st of June on account of dry weather. Will want some more seed this winter.

W. R. CHANDLER.

Lanes, S. C., Dec. 15, 1913.

I have planted your Pedigree-Cleveland Big Boll cotton for two years and find none better. It yields fine in the field and makes a fine sample.

J. H. GRICE.

Sellers, S. C., Dec. 11, 1913.

The Pedigree-Cleveland Big Boll cotton seed I bought of you was so fruitful that I made one and one-half bales per acre, and all the farmers want the seed another year. We plant three or four varieties, but we shall adopt your "Wannamaker" next year. Wishing you much success.

G. I. THOMPSON.

Ailey, Ga., Dec. 9, 1913.

Last year I bought ten bushels of your Wannamaker Pedigree-Cleveland Big Boll cotton seed for my farm near Darlington, S. C., and I was very much pleased with the results.

E. M. McCOWN.

Denmark, S. C., Dec. 5, 1913.

I am pleased with the Wannamaker-Cleveland Big Boll cotton I bought of you last spring. It branches out near the ground, is very uniform in its growth and makes a high percentage of lint.

H. B. WISEMAN.

New Albany, Miss., Dec. 11, 1913.

Myself and others bought seed oats from you last fall and will say they were fine.

G. G. SHULER.

Vance, S. C., Dec. 5, 1913.

Will say that your Pedigree-Toole cotton seed and Pedigree-Cleveland Big Boll has given me best results. I planted one and one-quarter acres of Pedigree-Cleveland and made 2,650 pounds of seed cotton on ordinary land.

J. T. MILLER.

Newberry, S. C., 1913.

I ordered enough of your Improved Pedigree-Cleveland Big Boll cotton seed last year to plant half of my crop, and thought they were rather high, but I see now what I lost by not buying enough to plant my whole crop. It is all you claim for it, and more. Some of it made 40 pounds of lint to the 100.

J. T. COX.

Moore, S. C., Dec. 4, 1913.

I would be very glad for you to quote me your very best cash price on your Appler Seed Oats f. o. b. Creston or Cameron, S. C. I bought of you last season and was quite well pleased with the seed.

BEN H. HARVIN.

Harvin, S. C., Oct. 23, 1913.

In regard to your selection of Cleveland's Big Boll, the results are conclusive evidence that you have exercised great care and good judgment. The single stalk selection is the only sure way of improving cotton and corn. The possibilities of the cotton plant are yet unknown, but by close systematic and persistent single stalk selection greater yields can be reached. You are on the right track, and if you will stick to it you will get something that will make you feel good and at the same time you will be a benefactor to the farmers of our dear old South land.

J. M. KIMBROUGH.

Agri. and Asst. Director Ga. Exp. Sta., Experiment, Ga., 1911.

I congratulate you on your seed catalogue, and I feel that every man interested in Southern agriculture will join me in applauding you in selling your seed under the name of the standard variety rather than by bestowing new and misleading names.

J. F. DUGGAR.

Director Alabama Experiment Sta.
Auburn, Ala., 1911.

The Wannamaker's Improved Pedigree-Cleveland Big Boll cotton seed I bought from you last year made me five bales on four and one-half acres of ordi-

nary land, which for years had not been making but one-half bale per acre. The extraordinary prolificacy of this cotton has been the talk of all the farmers of this section of the county, and has shown that honesty in pedigreed seed pays even at a high first cost for classy seed. The merits of your seed show that you are near the 100 per cent. mark. One notable feature is that your cotton has no surplus weed and more fruit and less weed than the regular type of Cleveland.

H. EUGENE FANT.

Seneca, S. C., Jan. 10, 1914.

LATEST REPORTS FROM EXPERIMENT STATIONS.

Have just completed table of results of variety test of cotton, and you will see that your cotton came out first with us in 1913.

C. T. AMES,

Director Holly Springs Branch Experiment Station, Miss.

January 10, 1914.

(Note.—The table shows that our Wannamaker-Cleveland made a money value per acre of \$101.50, \$5.62 more than next highest, and \$14.84 more than Cleveland's Cleveland; and also that it was among the earliest, highest linting and largest balled varieties tested.)

Your esteemed favor of recent date, asking for the standing of your Wannamaker Pedigree-Cleveland Big Boll cotton received, and I beg to say that it stands at the head of the list.

JAMES M. KIMBROUGH.

Ga. Experiment Sta., Dec. 22, 1913.

I have your favor of recent date with reference to showing made by your Pedigree-Cleveland Big Boll cotton. We have not yet worked out our data with reference to money value, but your cotton took second place in number of pounds of lint cotton per acre, giving us a yield without fertilizer of 835 pounds lint per acre.

G. B. WALKER.

Miss. Delta Exp. Sta., Jan. 2, 1914.

Comments

All seeds are shipped in new strong sacks, branded and tagged so they will reach their destination quickly, safely, and without waste.

Place your orders at once as our supply is limited, and as "first come, first served" is our rule. Remember, also, that freight transportation is very slow and often subject to delay during the spring fertilizer season; and if you get your seed too late for planting, do not blame us for your own unnecessary delay.

If you have any just complaint to make about the looks before planting, or the results after planting, of our seeds, kindly write us at once your reasons for same, so that we may explain and come to a mutual understanding about the matter.

Above all things, weigh and consider first, before blaming our seed, perchance you fail to make a good crop on account of adverse seasons or through any fault of your own, both of which it is very human to overlook and place the blame on the seed bought, forgetting that it is impossible for any seed without good seasons to get a fair showing.

In conclusion, we beg to say that we are in the seed business to stay, and will indefinitely improve (unless by our experiments we find something better) the above varieties of cotton and the one variety of corn and oats, giving you the advantage of whatever useful qualities we may develop in them in the future; and that in this work our minds are not entirely set on the mere making of money, but that we may be of some service in bringing about "the wave of agricultural prosperity that is now sweeping over our Southland."

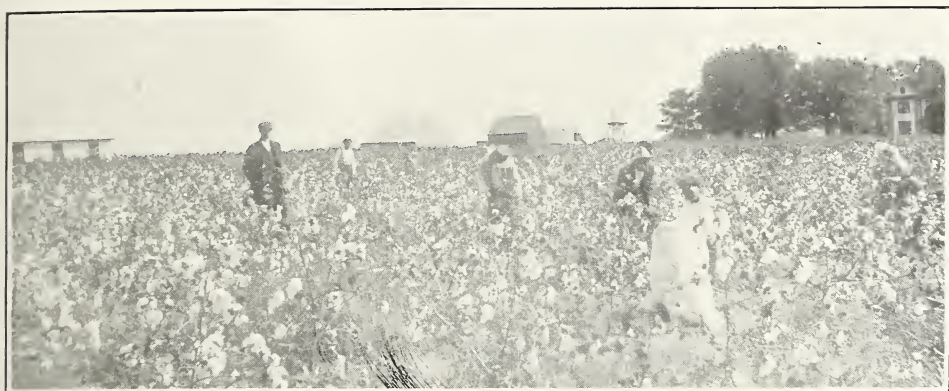
Wishing you a New Year of Health, Happiness and Prosperity, we beg to remain,

Yours very truly,

W. W. WANNAMAKER & SONS,

MODEL SEED FARM
SAINT MATTHEWS : SOUTH CAROLINA

By W. W. W., Jr., Plant Breeder



View of *Model Seed Farm* (Seed House to Left)

TERMS and DIRECTIONS: Cash must accompany every order for seed, either by registered letter, post office money order, draft or check. Write name and full address plainly, and state how you want seed shipped—by freight or express.

Seed will be shipped at once, but will hold a reasonable time if purchaser so requests.

Seed will be booked in the fall, without requiring cash in advance, but must be shipped the beginning of the new year, cash to accompany shipping directions.

REFERENCES: Any citizen or bank of Calhoun County, in which county we are situated; the Agricultural Officials of the North Carolina Experiment Station, Raleigh, N. C.; South Carolina Experiment Station, Clemson College, S. C.; Georgia Experiment Station, Experiment, Ga.; Alabama Experiment Station, Auburn, Ala.; and Mississippi Experiment Station, Agricultural College, Miss., where we have sent our seeds to be tested, so their merits or demerits might be brought before the farmers of the South in impartial competitive tests; J. N. Harper, Clemson College, S. C.; E. J. Watson, Commissioner of Agriculture, Columbia, S. C., etc.



Seed - Breeding is Our Specialty



1913 One hundred-ear-to-row Test and Breeding Patch Marlboro—Two-ear Corn, 100 rows, 2½ acres
Testing and Weighing

Honesty, Method & Care in Selection

IS OUR POLICY